

## CLAIMS

1. A twenty-gigabit per second two to one multiplexor comprising:
  - first and second input amplifiers that respectively produce output signals by respectively receiving and amplifying first and second ten-gigabit per second input signals;
  - first and second power dividers that each produce two output data streams by respectively splitting the output signals of the first and second input amplifiers;
  - first and second mixers that produce output signals by respectively mixing output signals of the first and second power dividers with a 10 GHz local oscillator signal;
  - a first means for combining signals that produces an output signal by combining the output signal of the first mixer with an output data stream with the first power divider;
  - a second means for combining signals that produces an output signal by combining the output signal of the second mixer with an output data stream of the second power divider;
  - a T/2 delay line that produces an output signal by delaying the output signal of the second combining means; and
  - an output combiner means that outputs a 20-gigabit per second data stream by combining the output signal of the T/2 delay line with the output signal of the first combining means.